Claims

1. A method for operating an internal combustion engine (10), in which an air filling (rl) in a combustion chamber (14) is ascertained, taking a pressure (ps) in an intake conduit (22) into account, characterized in that the air filling (rl) is ascertained on the basis of a model (A), which as its input variables receives an rpm (nmot) of a crankshaft (44) and a ratio of the pressure (ps) in the intake conduit (22) to an ambient pressure (pu).

2. The method as defined by claim 1, characterized in that the model (A), as its input variable, additionally receives a temperature (Tbr) of the air present in the combustion chamber (14).

3. The method as defined by claim 2, characterized in that it is assumed that the temperature (Tbr) of the air present in the combustion chamber (14) is equal to a detected temperature of the air in the intake conduit (22).

4. The method as defined by claim 2, characterized in that the temperature of the air present in the combustion chamber is ascertained on the basis of a model, which as its input variables receives a detected temperature of the air in the intake conduit and at least one further detected temperature of the engine, in particular a coolant temperature, an exhaust-gas temperature, and/or a cylinder head temperature.

5. The method as defined by one of the foregoing claims, characterized in that the ambient pressure (pu) is ascertained on the basis of a model (B), which as its input variables receives a difference (dp) between a detected pressure (ps) and a modeled pressure (psmod) in the intake conduit (22).

6. The method as defined by claim 5, characterized in that the ambient pressure (pu) is ascertained only if the throttle valve opening, or an equivalent variable (msdk), reaches and/or exceeds a limit value (S).

7. The method as defined by one of claims 5 or 6, characterized in that the modeled pressure (psmod) in the intake conduit (22) is ascertained on the basis of a model (C), which as its input variable receives a difference (drl) between an air flow rate (rldk), into the intake conduit (22), and an air flow rate (rlkdroh) out of the intake conduit (22) into the combustion chamber (14).

8. The method as defined by claim 7, characterized in that the air flow rate (rlkdroh) out of the intake conduit (22) into the combustion chamber (14) is ascertained on the basis of a model (D), which as its input variable receives a position (wdkba) of a throttle valve (24).

9. The method as defined by claim 8, characterized in that the model (D) additionally receives a correction variable (ofmsndk) of a throttle valve characteristic curve, which is ascertained from the difference (dp) between the modeled pressure (psmod) and the ascertained pressure (ps) in the intake conduit (22).

10. The method as defined by claim 9, characterized in that the correction variable (ofmsndk) is ascertained only if the throttle valve opening, or an equivalent variable (msdk), is less than a limit value (S) and/or reaches that limit value.

11. The method as defined by one of the foregoing claims, characterized in that at least one model (A, D) includes a characteristic curve and/or a performance graph (50, 80).

12. A computer program, characterized in that it is programmed for used in a

method as defined by one of the foregoing claims.

13. An electrical memory for a control and/or regulating device (48) of an internal combustion engine (10), characterized in that a computer program for use in a method as defined by claims 1 through 11 is stored in it.

14. A control and/or regulating device (48) for an internal combustion engine (10), characterized in that it is programmed for use in a method as defined by one of claims 1 through 11.